Treatment of Impetigo with Sulfonamide-Urea Powder

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SUMMARY

Sulfonamides can be used in the treatment of impetigo with vastly increased safety and with more effectiveness in powder rather than ointment form when combined with urea powder in a ratio of approximately three parts of sulfonamide to one of urea.

Of 701 patients treated with such a mixture, 95.6 per cent were cured within a week. The only complication was local dermatitis which occurred in 0.57 per cent of patients. This compares favorably with results obtained with newer and expensive drugs which usually have the disadvantage of being used in a greasy vehicle.

The low incidence of sensitivity reaction to the sulfonamide-urea powder is perhaps ascribable in part to the avoidance of a greasy vehicle.

SULFONAMIDES combined with urea as a powder for topical use against impetigo are highly effective, safe, and simple to use. In addition, they are clean, cheap, and do not have the occlusive, heating, smearing effect of an ointment vehicle. The avoidance of such a vehicle may play some part in reducing the sensitizing tendency of the sulfa drugs.

CRITERIA FOR SATISFACTORY LOCAL APPLICATION

Sulzberger and Baer[12] pointed out that any new topical agent should be evaluated for therapeutic effect, for sensitizing capacity, and with regard to whether it may be used systemically. And, if it may be used systemically, it is important to know whether the sensitizing effect of previous topical use may foreclose use of the drug parenterally or enterally, perhaps as a life-saving measure, in treatment of a general illness. (This consideration may apply to practically all the newer antibiotics also. Yet, although there have been repeated warnings against the indiscriminate local application of sulfa drugs, some investigators who join in these admonitions do not hesitate to recommend the newer drugs for the same purpose, even though the degree to which they cause sensitization has not yet been determined.)

La Londe and Gardner[5] quoted studies in which it was noted that urea renders sulfonamide compounds more soluble and that it also has a solvent action on pus, debris and necrotic tisues which act as sulfonamide inhibitors. It also has the advantage of being relatively non-toxic, mildly bacteriostatic, and inexpensive. Organisms resistant to sulfonamides are no longer so when the drug is combined with urea. Some organisms which are not susceptible to either a sulfa drug or urea alone in vitro are destroyed by the two drugs together.

CLINICAL STUDY

The authors have used 70 per cent sulfathiazole and 30 per cent urea powder routinely in treatment for impetigo since 1943. Patients known to be sensitive to sulfonamides were not treated with this preparation. As sulfathiazole has been deleted from New and Non-Official Remedies,[9] sulfadiazine may be used instead. The former, in combination with urea, is a coarse grainy white powder; the latter mixture is finer.

The records of 1078 patients with impetigo who were treated in the office were reviewed. Seven hundred one patients were treated with the powder, and 670 of them (95.6 per cent) were well within a week. Local dermatitis developed in four patients (0.57 per cent); it cleared promptly when use of the powder was discontinued. Fifty-nine patients were treated with 5 per cent sulfathiazole ointment, of whom 44 (74.6 per cent) were well within a week. Dermatitis developed in three cases (5 per cent). Five per cent ammoniated mercury ointment was used in treatment of 268 patients, of whom 146 (54.4 per cent) were well within a week. Dermatitis developed in three cases (1.1 per cent). Various preparations—sometimes more than one in a single case—were used in treating 50 patients: 3 per cent Vioform® cream, half-strength Quinolor® compound ointment, penicillin ointment, bacitracin ointment, tyrothricin in Intraderm,® aureomycin ointment, or nitrofurazone ointment. None of the preparations was used in a sufficiently large group of patients to permit separate evaluation, but there were treatment failures with all except aureomycin and nitrofurazone, each used in only one case. Unfavorable reactions occurred in two of nine patients treated with penicillin ointment.

REACTIONS

Three of the four patients who had allergic reaction to the urea-sulfathiazole powder had not, so far as they knew, been previously exposed to sulfonamides. Two of them had local erythematous and weeping dermatitis within 48 hours after application of the powder, and the other had local dermatitis and scattered papulovesicles elsewhere over the body on the eleventh day of treatment. The

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patient who had had previous exposure to sulfonamides had used 5 per cent sulfathiazole ointment on one occasion and the urea-sulfathiazole powder on two occasions without trouble. In all four cases, cool wet dressings were applied and the dermatitis cleared within a week.

DISCUSSION

There is now more confusion as to the treatment of impetigo than there was 15 years ago. As recently as 1949, Rothman and Shapiro [11] believed that ammoniated mercury was the most commonly used agent. Miller and co-workers[7] noted that a variety of ointment preparations, bacitracin, sulfonamides, penicillin, dihydrostreptomycin, and nitrofurazone, were rapidly effective, but that sensitization rates varied. They reported that dihydrostreptomycin ointment caused reactions in 3.7 per cent of patients, which was a lower incidence than that associated with penicillin, the sulfonamides and nitrofurazone but significantly higher than that with bacitracin. Sulzberger and Baer[13] observed that aureomycin ointment, which has a relatively low sensitizing index (but higher than that of bacitracin or of the powder discussed herein) is a remarkably effective non-irritating form of therapy for the common varieties of pyoderma.

MacKenna and Cooper-Willis[6] in 1945 compared results of treatment of impetigo with microcrystalline sulfathiazole in 15 per cent suspension, with ordinary sulfathiazole in the same concentration, and with lotio cupro-zincica. The reported results, based on a statistical analysis of 1118 uncomplicated cases of contagious impetigo, suggested that, except for a sensitization rate of 2.5 per cent, treatment with sulfathiazole was superior.

Kile, Welsh and McAfee[4] used neomycin (derived from Streptomyces fradiae) in treating 200 patients, several of whom were known to be sensitive to penicillin, streptomycin, bacitracin and aureomycin applied topically. None of the patients had allergic reaction to the new drug, although several were sensitive to the ointment base.

Bacitracin ointment[1, 2, 3, 8] approximates penicillin, nitrofurazone and the sulfonamide drugs in effectiveness, but 0.5 per cent of patients are sensitive to it—a sensitivity rate approximately the same as that of the 70 per cent sulfathiazole-30 per cent urea powder. In addition, it is inactivated by hydrogen peroxide and potassium permanganate and is unstable in an alkaline medium. In contrast, the powder may be applied without debridement or preliminary wet dressings, although such procedures do not interfere with its effectiveness.

In the series here reported upon, the sulfathiazole-urea powder was the most rapidly effective drug, and the sensitivity rate compared favorably with that of the safest drugs now in use. One reason, perhaps, for the low incidence of reaction was the shortness of the period of treatment. There was only one instance of systemic reaction—toxic absorption dermatitis. There is a theoretical possibility of such a reaction from absorption of an appreciable amount of the drug from large denuded wounds, but in such a case the patient usually has fever or other symptoms of systemic disease, and would be best treated with an antibiotic systemically to prevent a major complication of coccal infection. There is also the remote possibility of bizarre hypersensitivity of the periarteritis nodosa type, as described by Rich,[10] but this remains theoretical with the use of the sulfonamide-urea powder as the authors advocate. A number of patients used the powder many times without having difficulties of any sort.

A minority of the patients in each of the groups treated by the various means received small exposures of superficial fractional x-ray therapy for diseases accompanying the impetigo, such as underlying eczema or dermatitis.

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